

## COMPLETE EXTERNAL DISLOCATION AT THE ELBOW.

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ON November 17, 1899, J. A. L., aged sixty-three years, a farmer living near Frederick, Md., was riding in a spring wagon, when the wheel sank into a rut, and he was thrown to the ground, falling on his right elbow. He got in the wagon again and drove to Frederick, and consulted two physicians, who attempted to remedy the injury to his elbow, but without success. On November 21 he entered the University Hospital, Baltimore, for treatment, and was assigned to my service. The patient was a small, spare man, whose intelligence did not appear to be great; at least he could give no satisfactory account of the injury beyond what has just been related. Upon admission, the right arm was much swollen and ecchymosed, and the configuration of the elbow was entirely obliterated. Pressure was very painful, and the bony parts could not be distinguished. The limb was flexed and somewhat pronated, and there was an absolute loss of the power of voluntary movement, whilst passive motion could only be effected to a limited degree. His temperature was  $98^{\circ}$  F., pulse 80, and respiration 20. As the swelling was too great to permit any effort being made to reduce what was evidently a dislocation, hot wet cloths were wrapped around the elbow and the patient kept in bed. The brawny edema gradually subsided until the anatomical landmarks could be made out by deep pressure. There was a great increase in the breadth of the elbow, with a projection especially prominent upon its outer aspect. The cup-shaped depression on the head of the radius could be readily made out, and the radial head could be felt to rotate in pronation and supination.

The olecranon process could be felt to the outer side of the external condyle of the humerus, and the finger could be made to sink into the greater sigmoid cavity of the ulna. Both radius and ulna were partially rotated, the radius being somewhat in front of the ulna. The condyles and articular surfaces of the lower end of the humerus could be felt behind and to the inner side of the



FIG. 1.—Arm in extension.

radius and ulna, the epitrochlea being especially prominent. After the partial subsidence of the œdema, the contour of the elbow was quite characteristic, there being a great increase in the transverse diameter of the joint, with a marked projection externally and a corresponding depression on the inner side. The condition

was recognized to be a complete external dislocation of the forearm at the elbow, and an attempt was made to effect a reduction, under an anæsthetic, but without success.

I regret very much that a skiagraph had not been taken previous to attempting the reduction, as the manipulations were quite severe, and doubtless caused the erosion, to be noted, on the external aspect of the humerus.



FIG. 2.—Arm in flexion.

The X-ray picture herewith presented was taken by Dr. Henry Chandler, of Baltimore, and beautifully shows the condition. There is an absolute displacement of both bones of the forearm to the outer side, the radius is slightly anterior to the ulna, and the inner side of the coronoid process of the ulna is placed in front of and just below the external condyle of the

humerus, whilst the olecranon process is behind and above the condyle. The picture is taken from the front, with the forearm extended as much as possible. There is a loss of substance at the capitellum and external condyle, which was undoubtedly due to attrition during the efforts at reduction, as no sequestrum is shown in the picture, nor was any found at the operation. On December 7, 1899, twenty days after the infliction of the injury, he was again placed under chloroform, and a crucial incision was made on the back of the joint and the parts thoroughly exposed, the muscles separated from the external condyle and from the olecranon



FIG. 3.--Complete dislocation outward at elbow.

non process, and a further attempt made at reduction, which failed entirely until the triceps muscle was cut quite across, when the bones were made to resume their natural relations. The triceps was sutured and the extensive wound closed, except a small opening left for drainage, on account of the free oozing which occurred.

The triceps tendon was found displaced to the outer side, and attached normally to the olecranon process; the other muscles were also more or less out of their normal relations, but not torn. The ulnar nerve was found stretched, and was carefully held out of the way with a hook, but it was not injured; subsequently the

little finger and the inner side of the ring-finger remained anæsthetic for some time. Of course, all the ligaments of the joint were entirely ruptured. The radius retained its normal relation to the ulna, and the functions of pronation and supination were unimpaired. As has already been stated, the outer condyle was eroded, and some granular detritus was removed from the wound, but no sequestrum of any kind was found. The arm was put up in a slightly flexed position, and suspended. There was very little reaction following the operation, and the first dressing was made on the ninth day, when the sutures were removed, the limb exercised, and redressed in a right-angled flexion.

He left the hospital and returned home in four weeks from the time of the operation, with the limb in a useful position and a considerable range of passive motion, but without, as yet, much active motion, as there was still considerable cedema of the parts.

Owing to the anatomical complexity of the elbow-joint, complete lateral dislocations are of extreme rarity, and most surgeons have never seen an example of the injury. Stimson, in the edition of his work on "*Fractures and Dislocations*," published in 1899, gives the whole number of reported cases of complete dislocation outward as twenty-five. Three varieties of this location are mentioned:

- (1) Directly outward, without rotation of the forearm.
- (2) "Sub-epicondylar"; the elbow is flexed nearly or quite to a right angle and the forearm pronated; the radius is placed somewhat anteriorly to the ulnar, and the great sigmoid cavity is placed just below the external epicondyle.
- (3) "Supra-epicondylar"; the forearm is flexed at, or nearly at, a right angle and pronated. The bones of the forearm occupy a position above the external epicondyle, hence there will probably be considerable shortening of the limb.

I regard the case here presented as belonging to the "sub-epicondylar" variety, slight shortening of the forearm, flexion, and partial pronation being present. My experience is limited to this one case, and I can give no suggestions in regard to treatment, except to attempt reduction as soon as possible after the injury, and, when it is impossible to secure reduction by manipulation, to proceed without delay with operative measures.